RESEARCH & DEVELOPMENT

Building a scientific foundation for sound environmental decisions

From Tropical Beaches to Fjords: An Overview of Western Coastal EMAP

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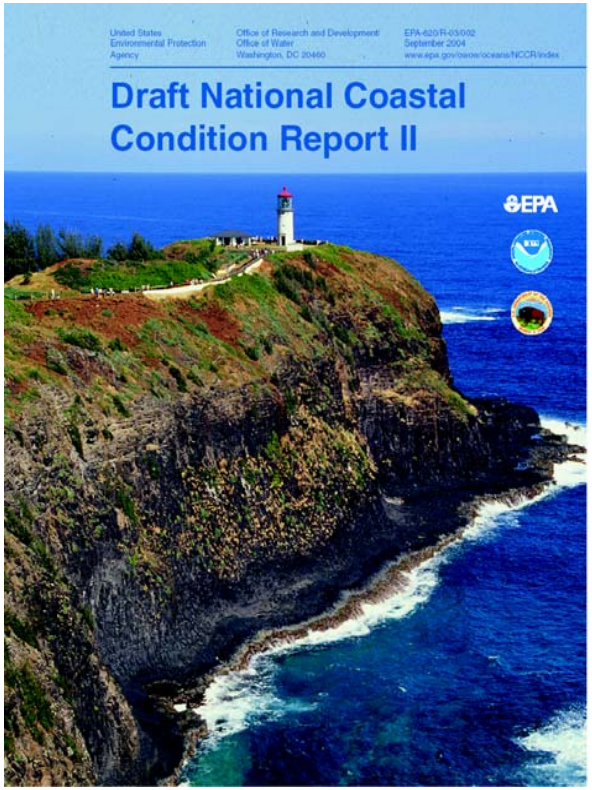
National Coastal Assessment Goals

Build the scientific basis, and the local, state and tribal capacity, to monitor for status and trends in the condition of the Nation's coastal ecosystems.

Objective:

Collect nationally comparable data to report on the condition of U.S. coastal resources.

NCCR - II currently in draft



Western Coastal Component, National Coastal Assessment, Environmental Monitoring and Assessment Program

Sampling Program

1999 Small estuaries of WA, OR, CA
2000 Large estuaries of WA, OR, CA
2001 Data workup
2002 Coastal systems of HI, South Central AK
2002 Estuarine tidelands of WA, OR, CA
2003 Continental shelf of WA, OR, CA
2004 Estuaries of WA, OR, CA, HI and southeast AK and pilot project in Guam
2005 ??? Coastal Wetlands

National Coastal Assessment
1999-2000, 2003 Western Partners

State of Oregon
Department of
Environmental
Quality

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Southern California Coastal
Water Research Project

Channel Islands
National Marine Sanctuary

2002 EMAP Collaborators

Alaska Department of Environmental Conservation

Hawaii Department of Health

UNIVERSITY OF HAWAII AT MANOA

Additional 2003 EMAP Collaborators

NCCOS NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE
science for coastal communities

NOAA Marine Operations

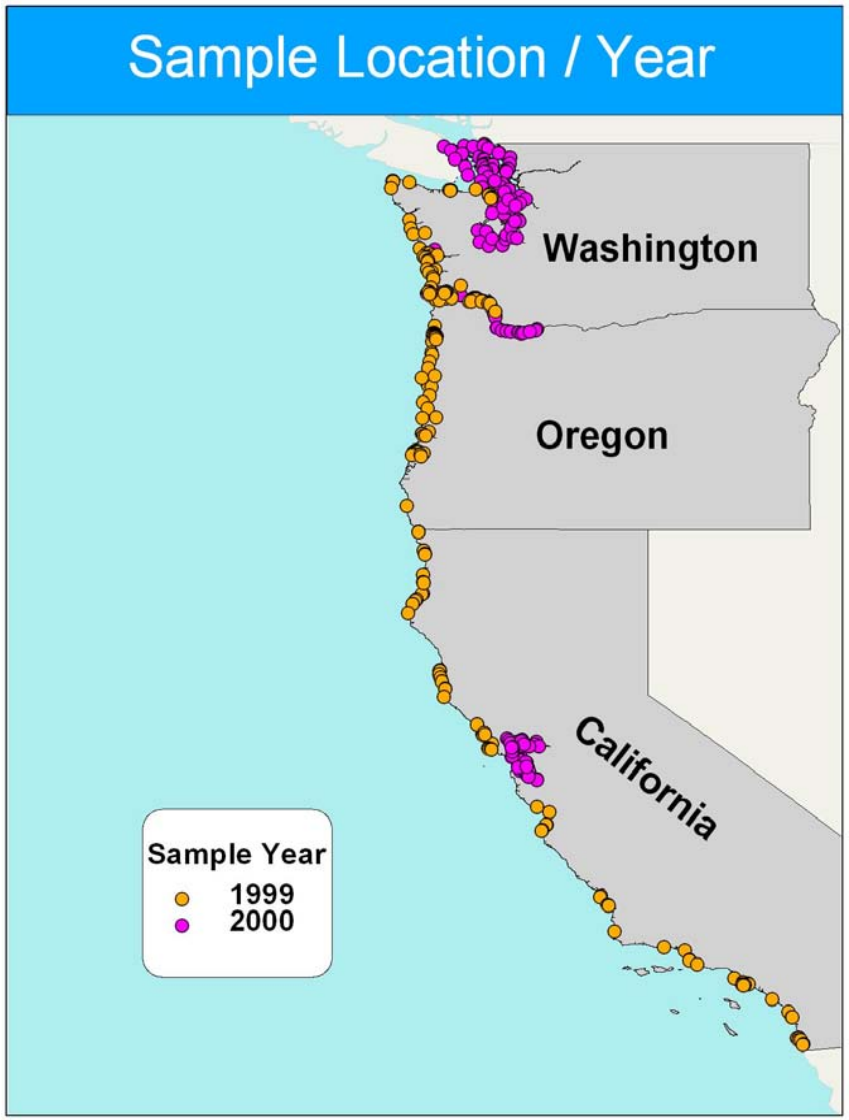
NCA-West: Sampling Effort

Multiyear Sample Design
Summer Index Period Sampling

1999
Washington: 50 stations
Oregon: 80 stations
California: 80 stations

2000
Puget Sound: 71 stations
Columbia River: 50 stations
San Francisco Bay: 50 stations

Total: 371 stations



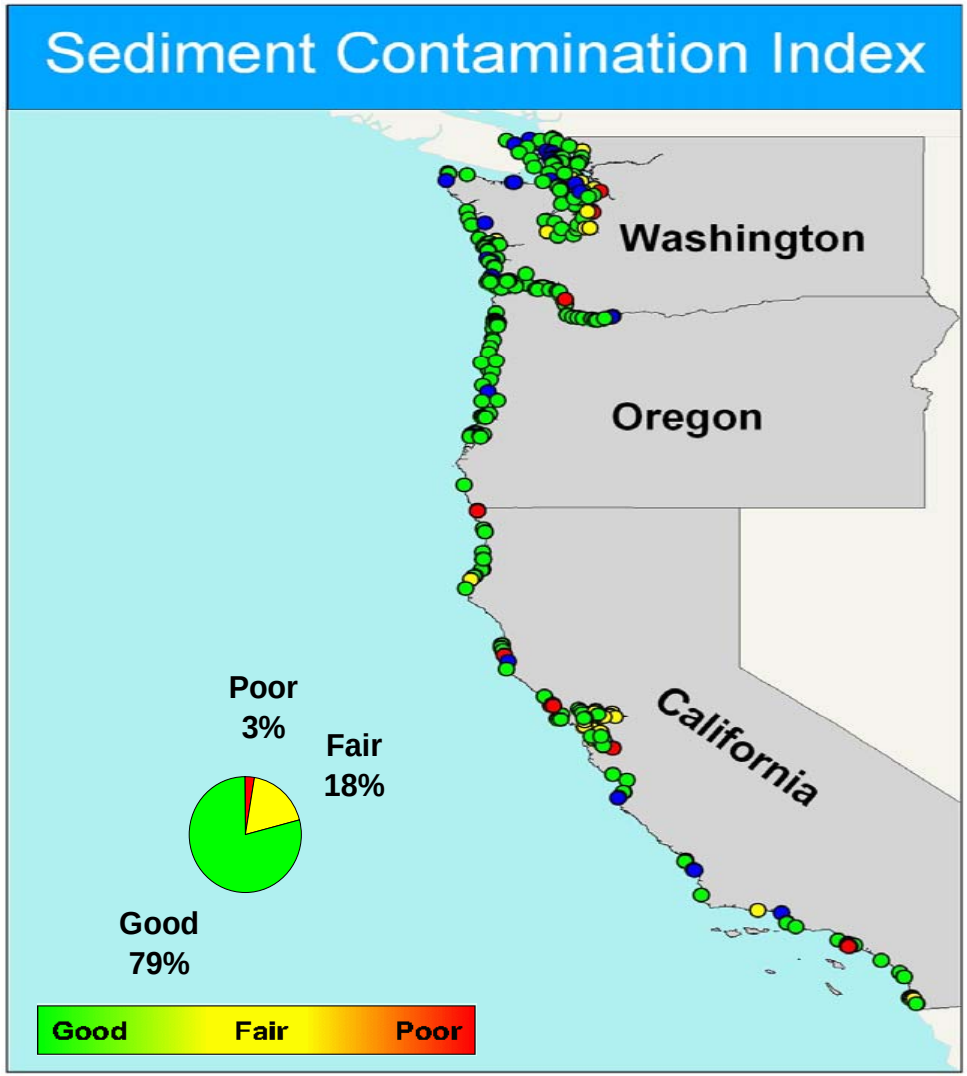
National Coastal Assessment - West 1999-2000 Results

Sediment Contamination Index

Poor: Site is > Effects Range Median (ERM) for one or more sediment contaminants

Fair: Site is > Effects Range Low (ERL) for five or more sediment contaminants

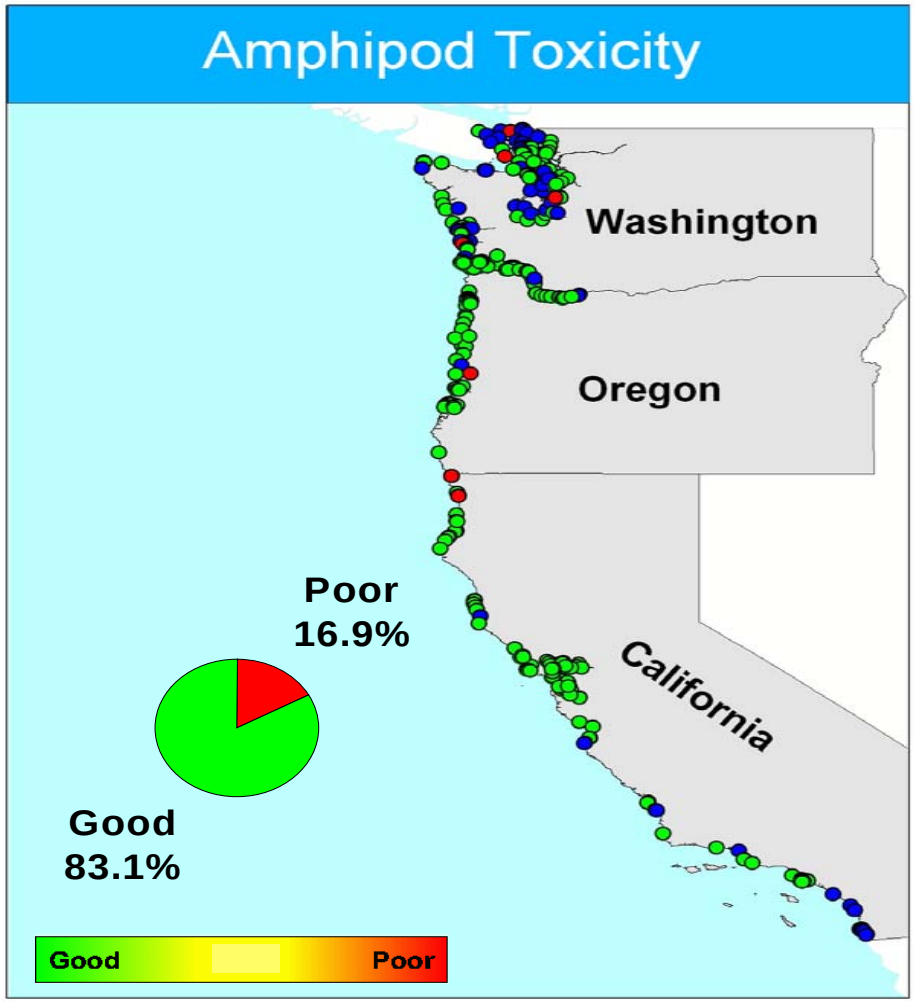
Good: No > ERM, less than 5 >ERL

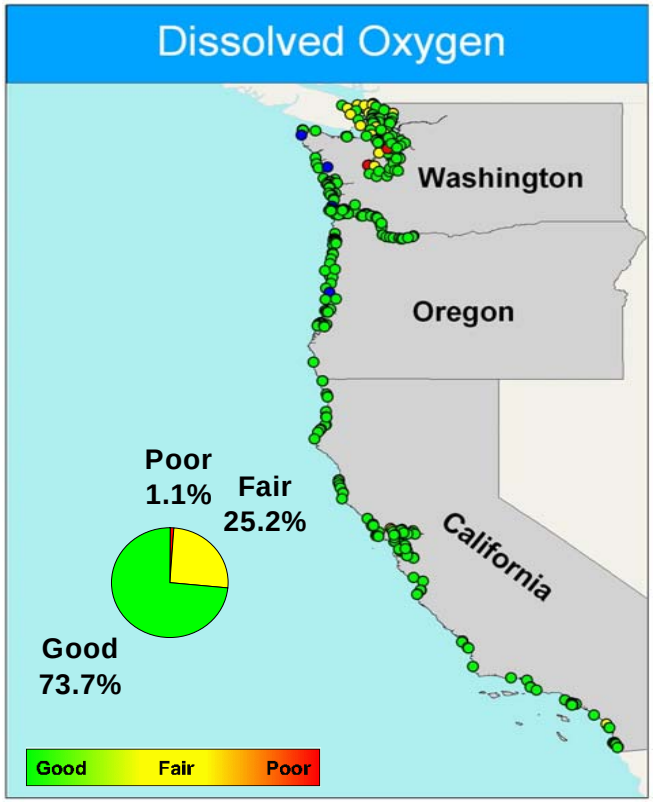


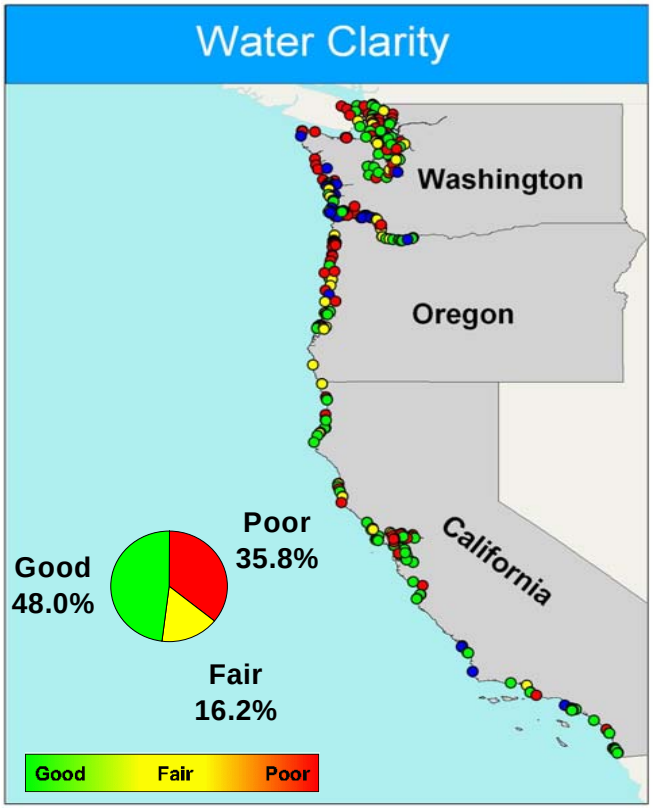
National Coastal Assessment - West 1999-2000 Results

Amphipod Toxicity

Good: survival >80%
Poor: survival < 80%





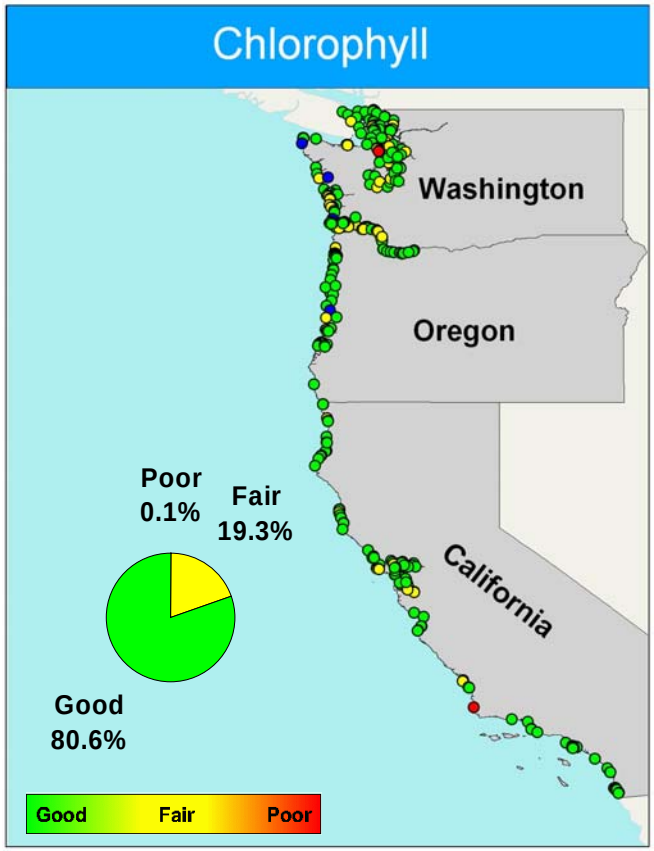


DO

Good: >5 ppm
Fair: 2-5 ppm
Poor: <2 ppm

Water Clarity

Good: > 20% of surface light at 1m
Fair: 10-20% of surface light at 1m
Poor: < 10% of surface light at 1 m



Chlorophyll *a*

Good: <5 ug/l

Fair: 5-20 ug/l

Poor: >20 ug/l

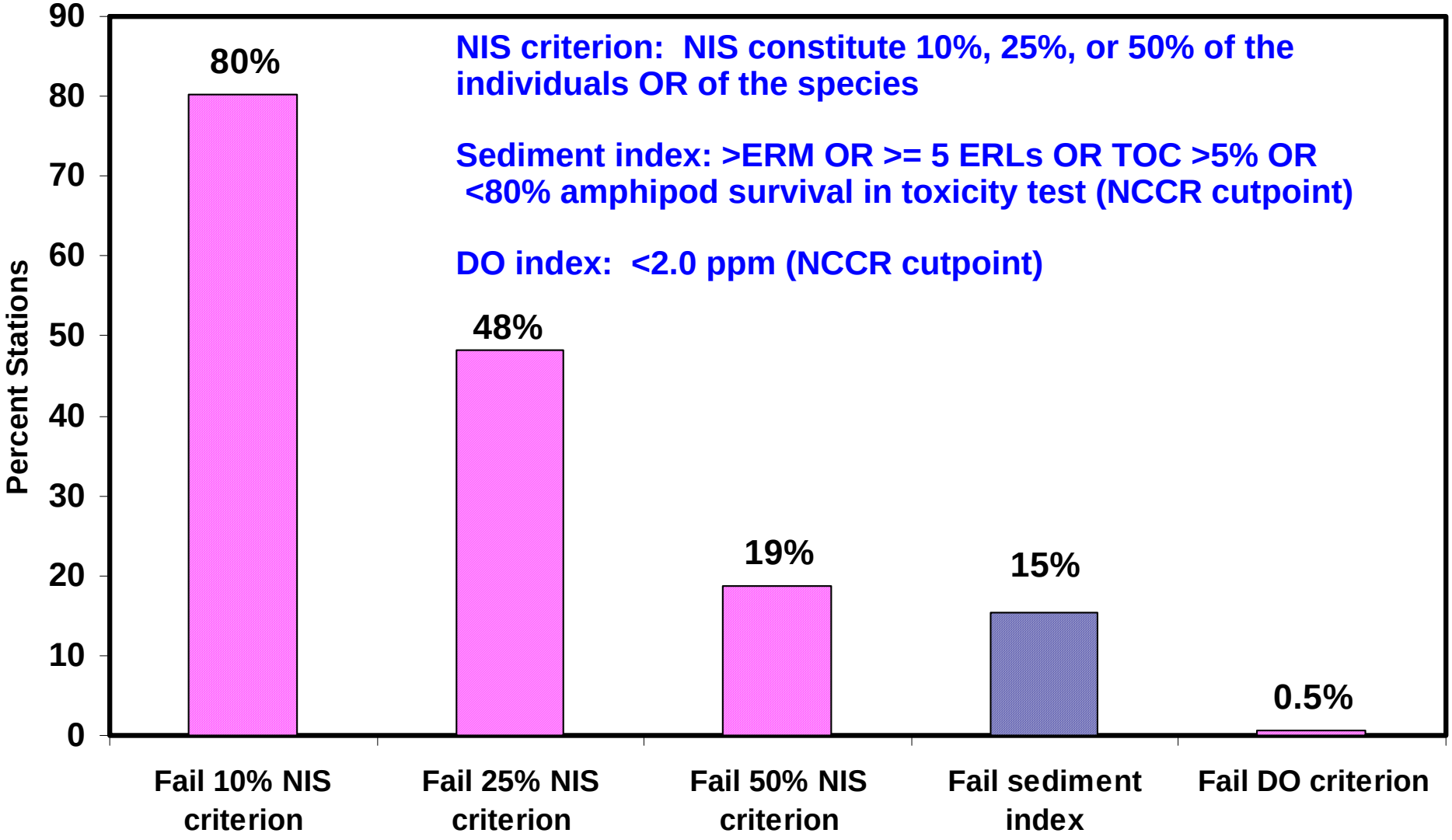
DIN

Good: <0.5 mg/l

Fair: 0.5-1.0 mg/l

Poor: >1.0 mg/l

1999 Small Estuaries
Nonindigenous Species (NIS) More Widespread Stressor Than Contaminants Or Low DO



Intertidal Sampling - 2002

Included Tideflats and Low Salt Marsh, Excluded High Salt Marsh

2002 Coastal Wetlands Pilot – San Francisco and Southern California

Landscape Condition

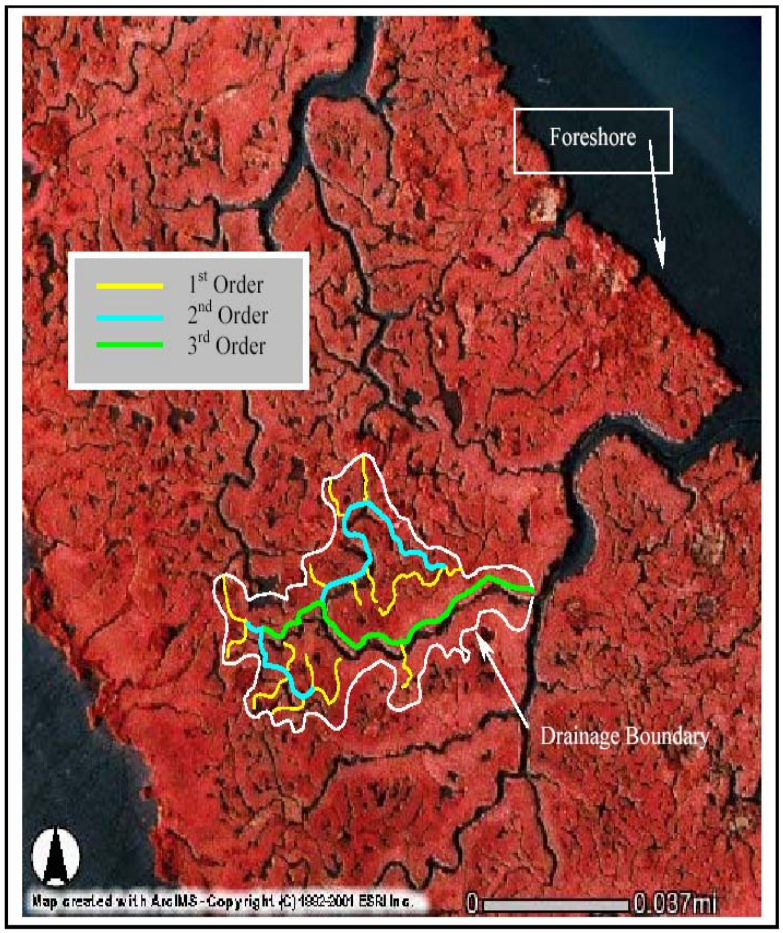
Ratio of Tidal Flat to Tidal Marsh

Patch Size Frequency Distribution of Tidal Marsh

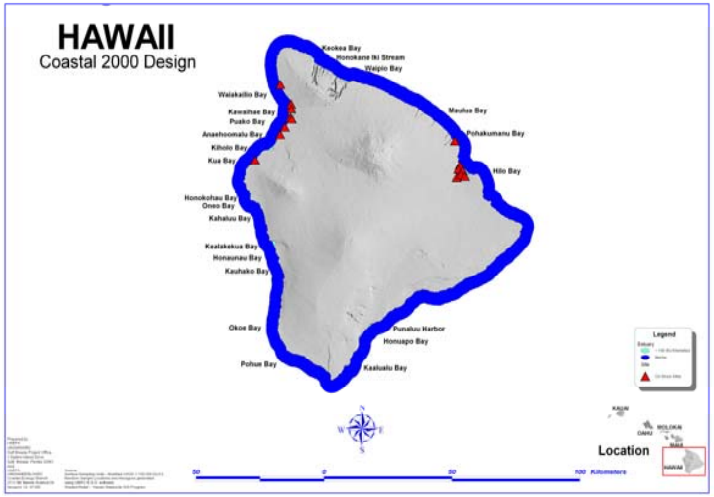
Connectivity of Tidal Marsh Patches

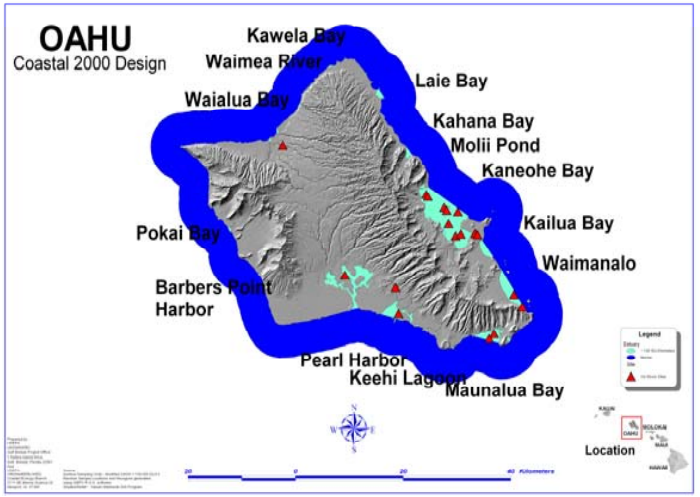
Marsh Edge:Area Ratios

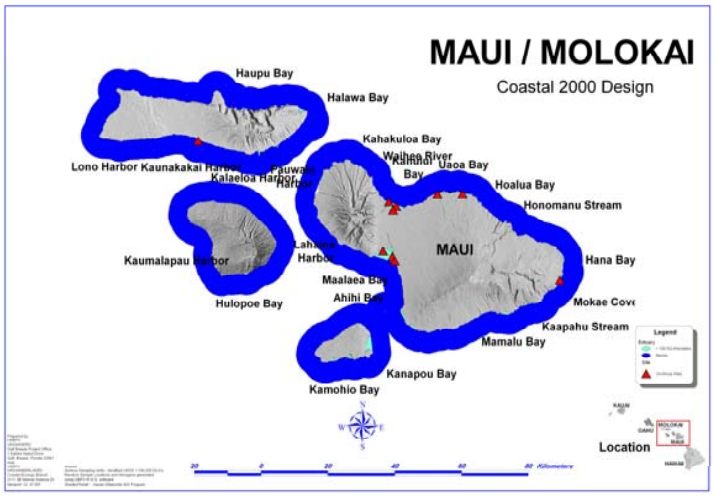
Percent of Land Border Undeveloped

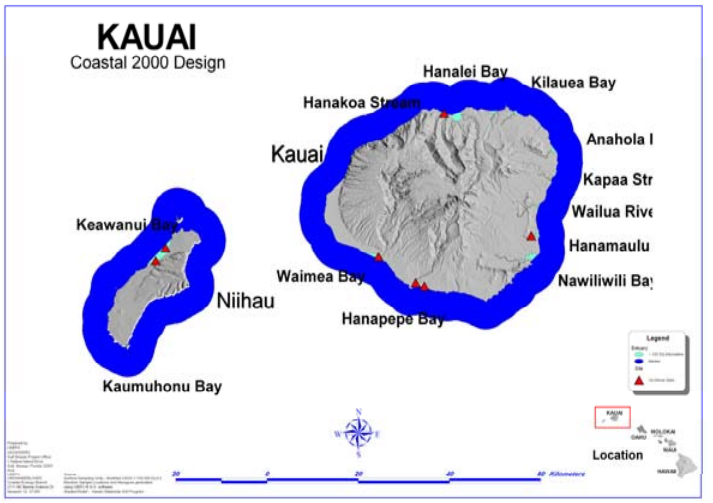


2002 Western Coastal EMAP Program
Hawaiian Islands - Extensive Study

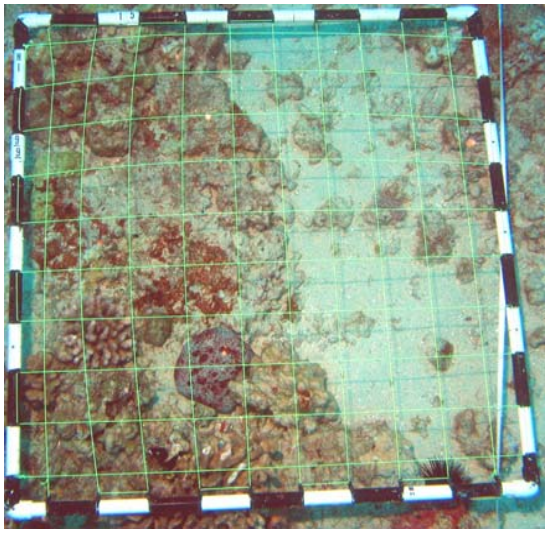


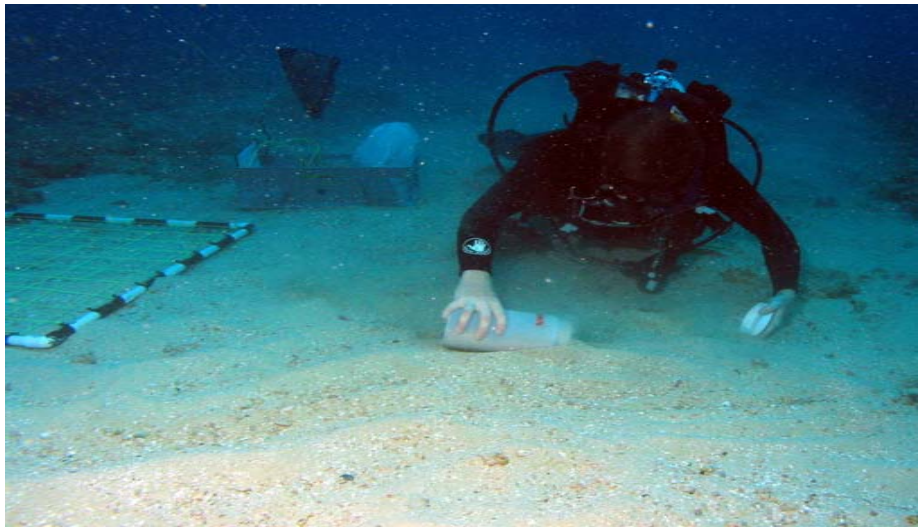


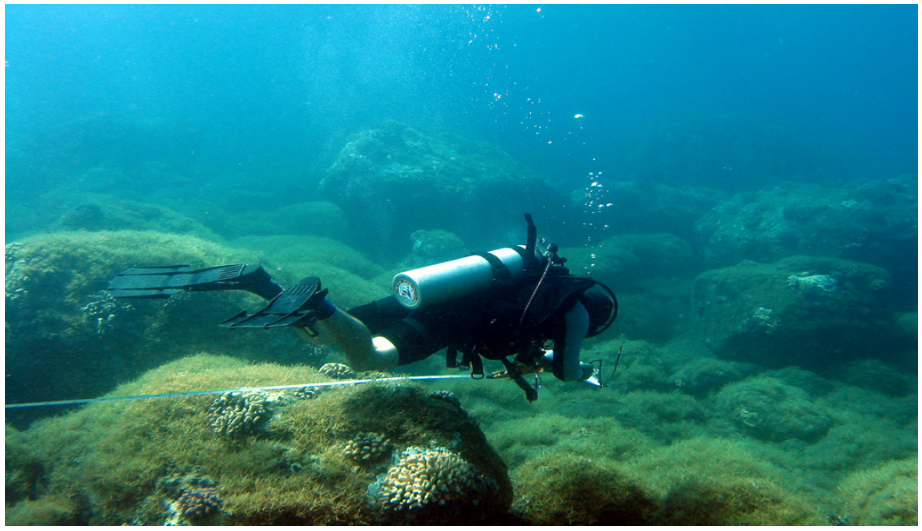


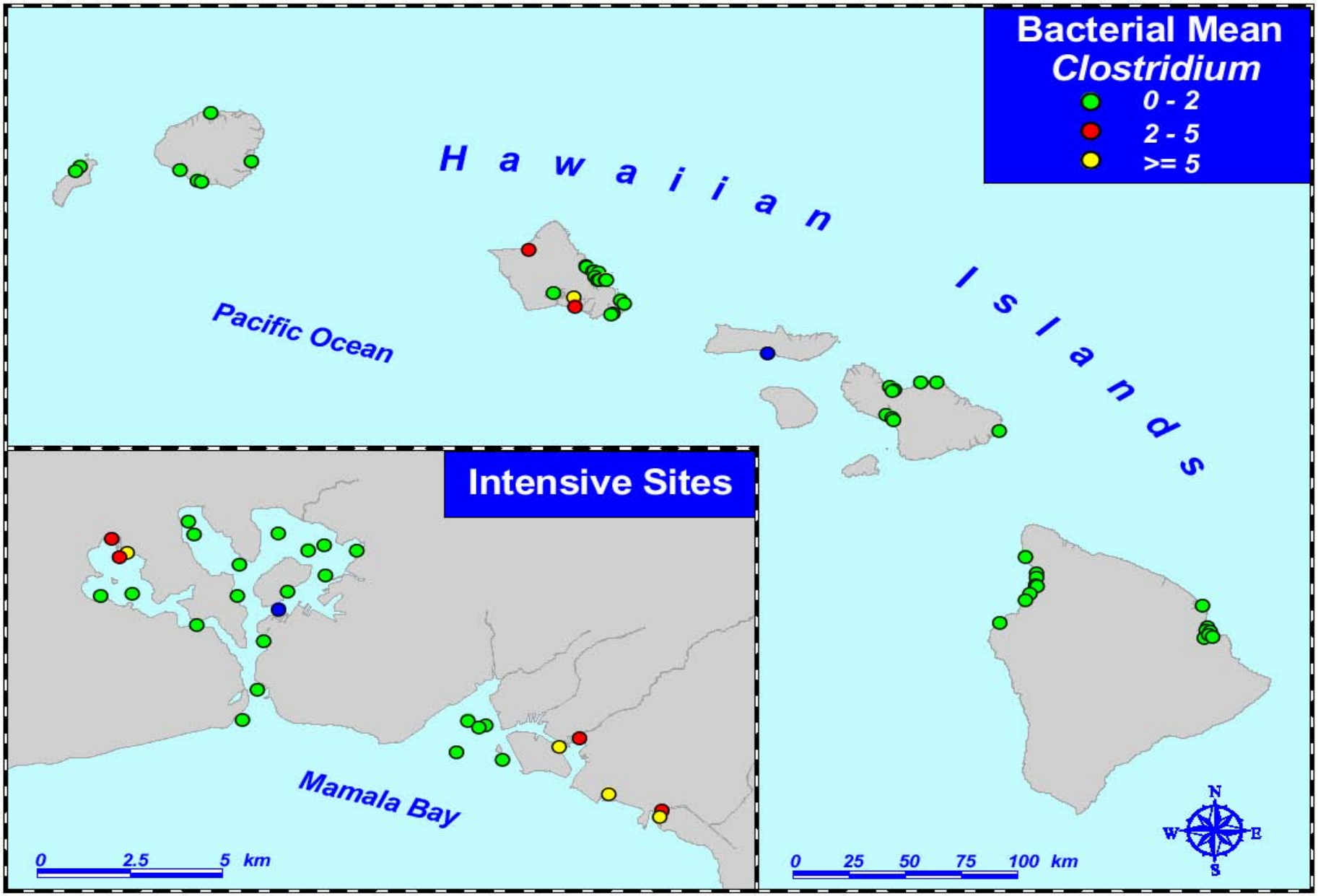


Field Work - Hawaii 2002
Oahu, Maui, Hawaii

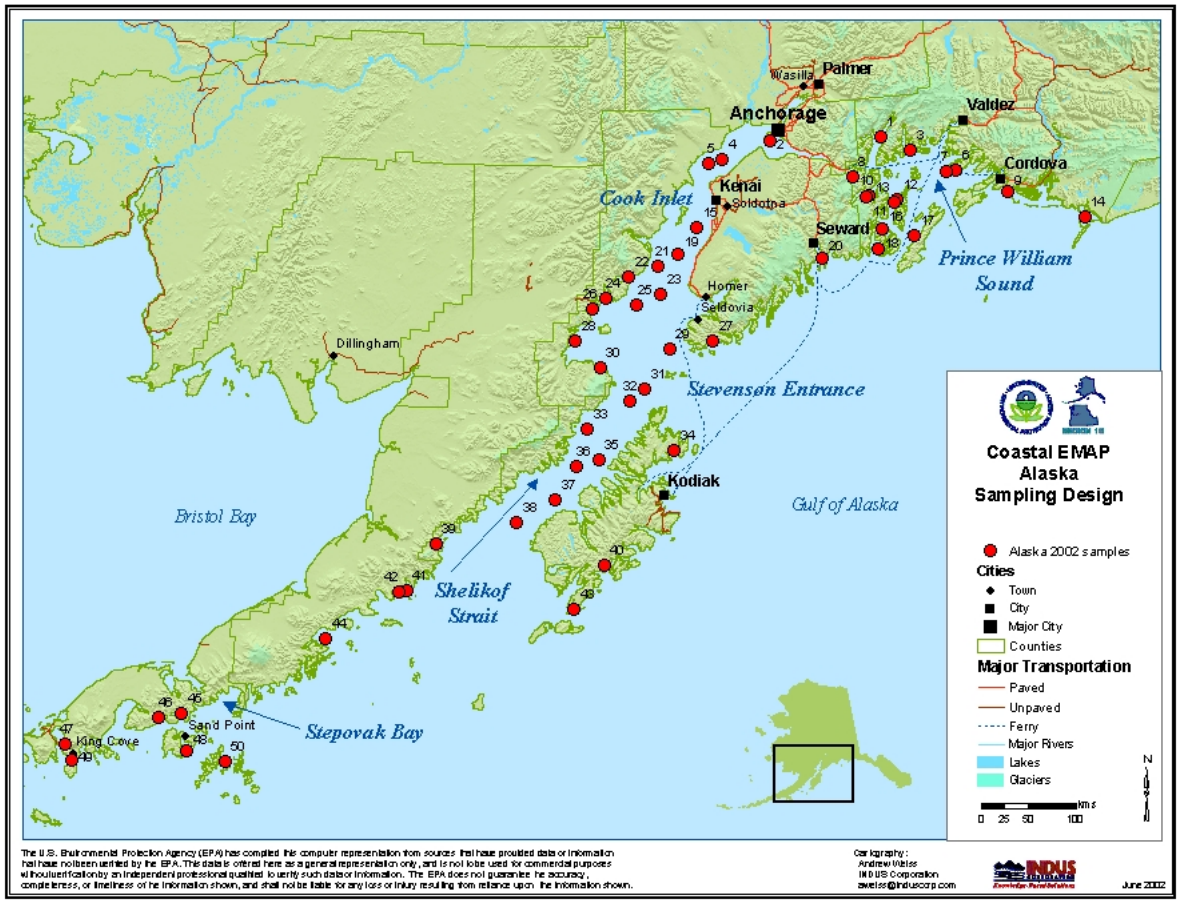


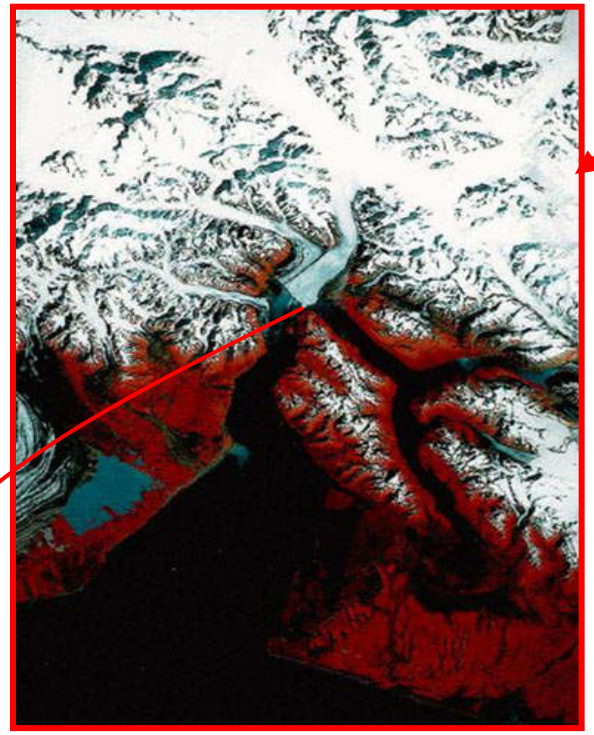


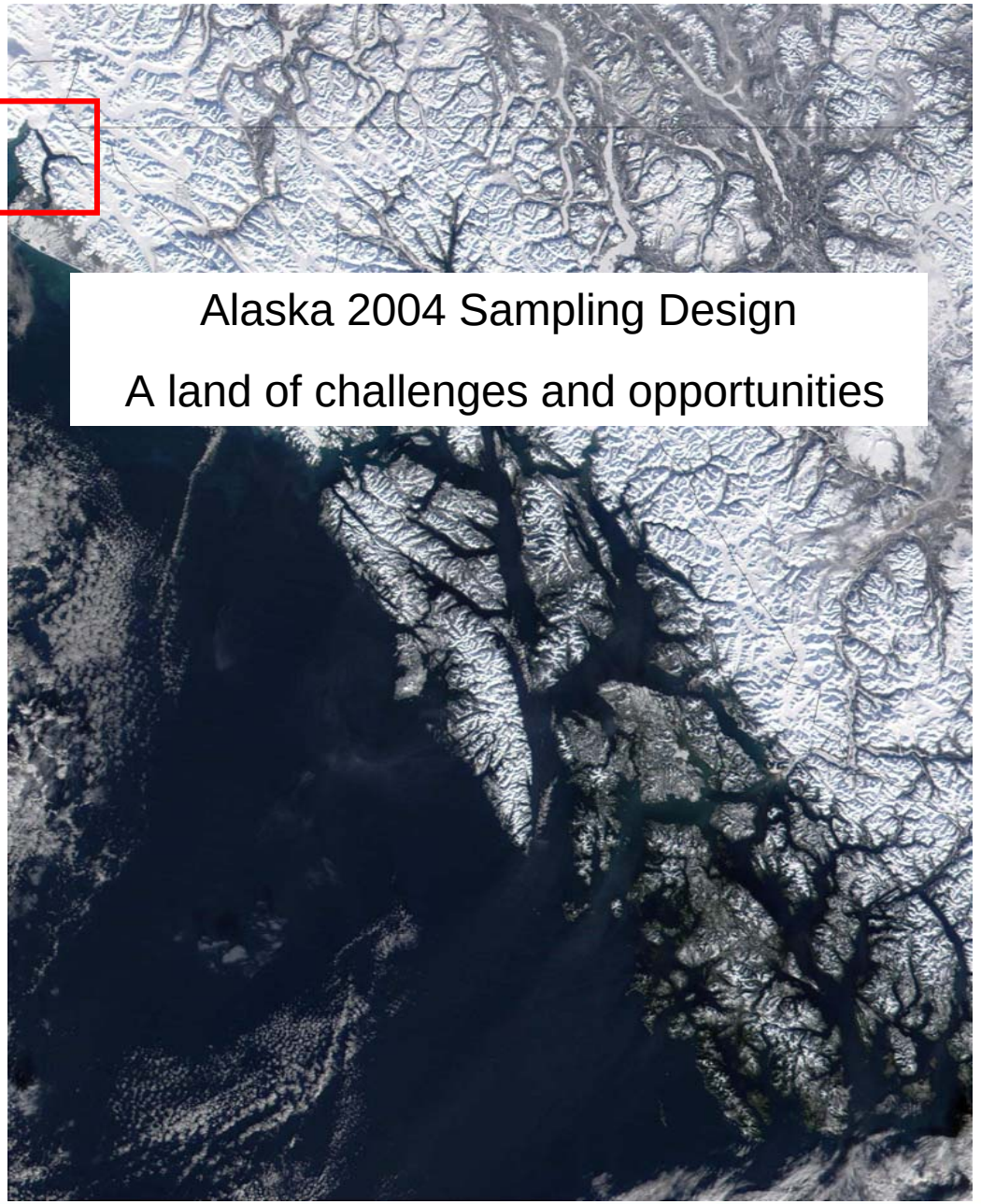



Bacterial Mean
Clostridium
0 - 2
2 - 5
>= 5
Hawaiian Islands
Pacific Ocean
Intensive Sites
Mamala Bay
0 2.5 5 km
0 25 50 75 100 km
N
W
E
S

2002 Western Coastal EMAP Program
Pilot Sampling Study, South Central Alaska







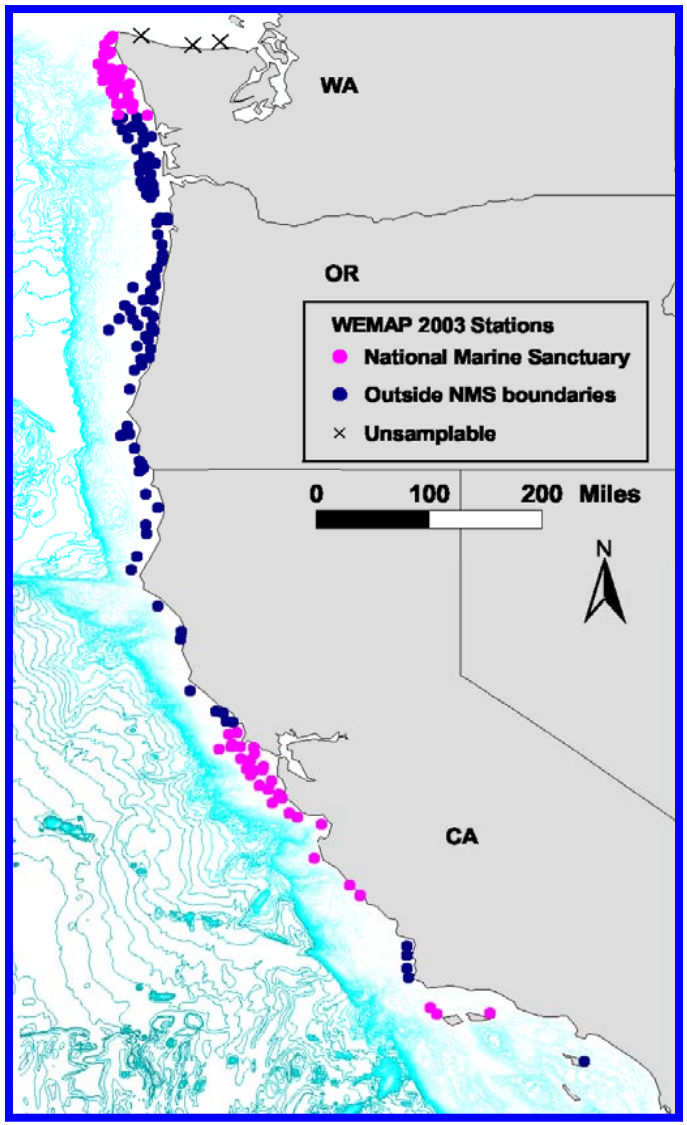
Alaska 2004 Sampling Design

A land of challenges and opportunities

Continental Shelf Pilot

R.V. McArthur II

2003 EMAP sampled the continental shelf of WA, OR and CA within the 30 to 120 m depth range, with 150 stations from WA to the Mexican border.



Western Coastal EMAP Conclusions

- Western Coastal EMAP is providing the first regional-scale assessment of ecological condition of coastal ecosystems of CA, OR, WA, HI, and AK.

- By sampling from the intertidal to the continental shelf, Western Coastal EMAP will provide a spatially comprehensive assessment of coastal conditions for CA, OR, and WA.

- Results from 1999 + 2000 indicate that ecological conditions are generally good for most of CA, OR, and WA.

- Sampling new habitats/environments presented a number of challenges and required testing new indicators.

- Western EMAP was successful to a large part because of partnering with state and federal agencies and universities.